**Title**

**Motivational Orientation and Risk Taking in Elite Winter Climbers: a qualitative study**

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**Abstract**

**Objectives:** High risk sports participants have typically been viewed as a homogenous group despite variability in performance characteristics and the level of risk undertaken. Prolonged engagement high risk sports such as winter climbing are relatively underserved within current literature. Elite winter climbers attempt climbs that are outside the scope of the current 'known' i.e. unclimbed routes. The majority of the current understanding of motivation in high risk sports is based on quantitative research and the methodologies and instruments used. The purpose of this study was to explore the experiences of elite winter climbers and gain a richer understanding of their motivational orientation and risk taking behaviour.

**Design:** Qualitative – inductive.

**Method:** Four elite male winter climbers (aged 42-49 years old) took part in semi-structured interviews and explore their motivational orientation and risk taking behaviour. A thematic analysis was used.

**Results:** Two super-ordinate themes of enactive mastery and engendered disinhibition emerged from the data. Enactive mastery was interpreted as a composite of two higher order themes; task mastery and self-mastery. Engendered disinhibition was interpreted as a composite of two higher order themes; social cognitive appraisal and self-perception.

**Conclusion:** Enactive mastery and engendered disinhibition emerged as key behavioural and psychological determinants that influenced individuals to attempt more difficult and riskier forms of winter climbing. Goal achievement was their primary motive which was set within a confidence frame encapsulated within these super-ordinate themes.

## Introduction

Participants in high risk sports such as mountaineering, rock climbing, sky diving, building antenna structure earth jumping (BASE jumping), surfing and white water kayaking voluntarily engage in activities that may cause serious injury or death. High risk sports participants have typically been viewed as a homogenous group despite variability in performance characteristics and the level of risk undertaken (Llewellyn & Sanchez, 2008). Variability also exists in the inherent length of exposure time to risk and the level of preparedness required to undertake different types of high risk sports (Woodman, Hardy, Barlow & Le Scanff, 2010). Winter climbing is considered to be a high risk sport (Schoffl, Morrison, Schwarz, Shoffl & Kupper, 2010) that includes the ascent of snow and ice filled gullies, thin veneers of ice on rock, mixed climbs (a combination of rock, ice and vegetation) and frozen waterfalls (Moran, 1998). Winter climbing routes are classified according to their level of difficulty, which is often primarily determined by the most challenging section called the crux. Little attention has been given to empirical, conceptual, or applied research on the motivational psychology of winter climbers. For the benefit of the reader risk related motivational theories and contemporary research findings are reviewed here.

The complex relationships between personality characteristics, physiological arousal and performance in high risk sports have been investigated using a variety of motivational theories with sensation seeking being a dominant theme. Recently Kerr and Mackenzie (2012) explored motivation from a reversal theory perspective in a number of adventure sports including mountain climbing. The authors reported a range of meta-motivational states for participation including goal achievement, risk taking, social motivation and connection with the environment. Task mastery and self-efficacy have also been proposed as key factors that influence motivation in high risk sporting populations (Ewert, 1994; Llewellyn, Asghar, Sanchez & Jones, 2008; Slanger & Rudestam, 1997). Another emerging area of interest is affect self-regulation which considers high risk sports as a motivational source for individuals

with emotional difficulties. Castanier, Le Scanff and Woodman (2010) found that negative affectivity and escape self-awareness were predictors for high risk sporting participation when they controlled for sensation seeking.

Sensation seeking is a personality trait expressed as the aspiration and tendency of individuals to engage in risk related activities (Zuckerman, 1994). Impulsivity is considered to be an interrelated dimension within sensation seeking theory and defined as ‘‘the tendency to enter into situations, or rapidly respond to cues for potential reward, without much planning or deliberation and without consideration of potential punishment or loss of reward’’ (Zuckerman & Kuhlman, 2000, p. 1000). Factor analysis has shown impulsiveness and sensation seeking load on the same factor as conscientiousness which is a broader trait within the ‘Big Five’ model of personality (Aluja, Garcıa & Garcıa, 2004; Zuckerman, 2005).

Empirical evidence suggests that sensation seeking is a predictor of behaviour in risk-related activities although research in the domain of high risk sport has produced mixed results (Llewellyn & Sanchez, 2008; Jack & Ronin, 1998; Slanger & Rudstam, 1997). Kerr and Svebak (1989) and Jack and Ronan (1998) reported no difference in impulsivity between participants in high risk and low risk sports. More recently Llewellyn and Sanchez (2008) found sensation seeking and impulsivity were negatively associated with risk taking propensity in active rock climbers. The predominant body of research has measured sensation seeking using the Sensation Seeking Scale V (Zuckerman, 1994), although Jackson and Maraun (1996) challenged the construct validity of the scale and whether it measures sensation seeking per se. Furthermore use of the Sensation Seeking Scale V in research involving high risk sporting populations has been challenged (Llewellyn & Sanchez, 2008). As high risk sports participants completing the ‘thrill and adventure’ subscale are directly engaged in such activities their perception of the questions presented is biased and the measure compromised. This raises concerns over the use of the Sensation Seeking Scale V in studies investigating individual differences between high risk sports participants and controls. Some authors have used the

Impulsivity Sensation seeking scale (Zuckerman, 1994) in studies because it avoids reference to explicit high risk behaviours. Kerr and Mackenzie (2012) suggest sensation seeking in the form of adventure seeking may be a strong contributory factor but not the primary source of motivation in high risk sports participants.

Research evidence suggests that self-efficacy is a predictor of motivation for high risk sports performance (Llewellyn & Sanchez, 2008; Llewellyn et al., 2008; Slanger & Rudenstam, 1997). Self-efficacy refers to a "belief in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3). Self-efficacy is a form of situational specific self-confidence that is largely formulated through domain-specific engagement which is termed enactive mastery experience. Bandura (1997) claimed that individuals with high levels of self-efficacy are more likely to set themselves challenging goals, expend more effort when trying to achieve those goals and be more persistent in their efforts in the face of adversity. Studies that have investigated populations of rock climbers have shown that differences in self-efficacy predict the difficulty, frequency, and degree of risk undertaken by individuals (Llewellyn & Sanchez, 2008; Llewellyn et al., 2008; Slanger & Rudenstam, 1997). Disinhibition refers to a lack of restraint that allows individuals to perform activities which are considered to be dangerous and or of increased personal risk. Enactive self-mastery experiences have been found to be the most influential source of self-efficacy belief and a key disinhibiting factor in high risk sports (Llewellyn & Sanchez, 2008; Llewellyn et al., 2008, Norris & Weinman, 1996). Other factors which may influence self-efficacy to a lesser degree are verbal persuasion, vicarious experiences and physiological states (Bandura, 1997).

Reversal Theory considers meta-motivational states or frames by which an individual may interpret their motives for activity engagement (Apter, 1982; Apter, 2001). Reversal Theory proposes that motivation is influenced by reversal changes within four pairs of opposed meta-motivational states depending on individual circumstance. Individuals may display a particular dominance within each of these four meta-motivational states. The telic and paratelic pairing

has been applied in sports performance studies investigating motivation and the relationship between arousal and emotional intensity (e.g., Kerr & Mackenzie, 2012). Telic dominant individuals are motivated by task mastery and future performance goals whereas paratelic dominant individuals are motivated by the experience and process of the moment in time (Apter, 2001). Kerr and Svebak (1989) found an association with participants who displayed a paratelic dominant meta-motivational state and a propensity for involvement in high risk sports. In this way a paratelic protective frame may be formed which acts to protect an individual from the potentially debilitating effects of anxiety.

The purpose of this study was to explore, using a qualitative methodology, the experiences of elite winter climbers in terms of their motivational orientation and risk taking behaviour. Three important aspects were considered. Firstly the majority of our current understanding of motivation in high risk sports is based on quantitative research and the methodologies and instruments used (e.g., Physical Self-Efficacy Scale and Sensation Seeking Scale V). In using a thematic analysis we aimed to gain a richer understanding from the participants' perspective. Secondly, there is a limitation of our understanding of engagement in high risk sports- such as winter climbing- which may be deleterious to extending our understanding of motivational dynamics (cf. Keegan, Spray, Harwood & Lavallee, 2013; Keegan, Harwood, Spray & Lavallee, 2014).

## Method

### *Participants*

A purposive sample was selected to represent elite winter climbers who were able to discuss the motivational and disinhibitional factors involved in extreme winter climbing (Curtis, Gesler, Smith & Washburn, 2000; Patton, 2002). Inclusion criteria included domain-specific indicators of overall winter climbing ability and experiences of first ascents of unclimbed routes at the highest level of difficulty. Examples were numbers and verification of grade of climbs witnessed and corroborated by the climbing community within climbing club journals

and official guide books. Hence such climbing literature and climbing journals were scrutinised to identify leading activists who may be willing to participate in the study. Potential participants were screened against the inclusion criteria before being enrolled into the study. Four elite male British winter climbers were approached by the principal investigator (XX) and all agreed to participate in the study. The winter climbing community within Britain is relatively small therefore four participants were considered to be representative of an elite sample. Participants had an age range of 42-49 years (mean ± standard deviation (SD) 45.0 ±3.6 years) and were white, male Europeans. Participants were provided with an information sheet that explained the rationale and procedure for the study. All were willing to take part and attended their single face-to-face interview that took place within one week of being approached by the investigatory team at a location of the participant's choice. All participants received written and verbal information about the study and were informed that they could withdraw from the study at any time. Participants then signed a consent form before the interview commenced. The study was approved by the Research Ethics Committee at a British university and followed its procedural guidance.

***Ontological and epistemological assumptions***

Following recommendations in qualitative research (e.g., Grix, 2002), we shall outline the ontological and epistemological assumptions in order to create an understanding of the philosophical underpinnings of the authorship team. Given the relative under-serving of the participant group in existing literature, combined with our desire to understand the efficacious experiences of elite climbers, we approached this study from an interpretivist perspective. Hence the participants became central participant informants. Further, by exploring the views of the participants about the meaning behind climbing to them, they were able to make interpretations regarding the decisions they made as climbers (e.g., Smith & Sparkes, 2009a; 2009b), particularly when faced with challenges that -to other climbers -were deemed subjectively impossible. This perspective is consistent with a relativist ontology that contends

the interaction of multiple co-existing realities which may shape our lives (Guba & Lincoln, 1994). The principal investigator (XX) has 25 years of experience of rock, winter and alpine climbing and is an active mountaineering instructor. Others, however, in the team had no such climbing experience but were experienced researchers. This was seen to be an advantage to the research process. As such, open discussions informed the overall philosophy of the research approach. The research was therefore approached with an optimal combination of an open mind yet with an applied conceptual context.

***Procedure***

Initially, each participant took part in an in-depth face-to-face semi-structured interview with the principal investigator (XX). An interview guide of pre-determined topics was developed by the investigating team based upon established principles (Robson, 2011). The interview guide explored participants' winter climbing experiences, behaviours and issues relating to the ascent of previously unclimbed routes. This was done in order to fulfil the aim of the study, namely, to understand the motivational and disinhibitory factors of this elite sporting group. Examples of questions included "What motivates you to ascend previously unclimbed routes?" and "Can you describe the pressures involved in climbing difficult routes". The interview guide was piloted with winter climbers who were otherwise disconnected from the study. Following pilot interviews, volunteers were invited to critically discuss their experience of the interview. As such they were asked to comment upon the clarity and ease of use of questions. After this, peer debriefing between XX and XX occurred where the pilot interviews were discussed alongside the feedback from participants and the final interview guide was established. The final interview themes were made available to research participants prior to interview in order to increase the richness of data gained (cf. Christensen, 2009).

Clarification, elaboration and continuation probes (Rubin & Rubin, 2005) were used during the interview specifically to engage the participants in greater dialogue about emergent themes. Interviews were recorded digitally and professionally transcribed verbatim. This resulted in in

sixty-seven pages of single-spaced data in size 11 calibri font. The mean interview duration was 90 minutes. Emergent themes were subsequently discussed with participants as a mode of respondent validation. This occurred via informal interviews at a time and via a medium convenient for the participants (e.g., telephone interviews and e-mail conversations) by XX. Otherwise participants were assigned a participant number at transcription to ensure anonymity of the data.

***Data analysis***

Data analysis followed an iterative approach whereby emergent themes from formal interviews led to further informal data collection and analysis to allow ideas to develop (Howitt & Cramer, 2008). The following description outlines this iterative approach. Following transcription, interviews were subjected to a line-by-line analysis which formed the basis of a thematic analysis to establish emergent themes (Braun & Clarke, 2006; Fereday & Muir-Cochrane, 2006). Three members of the research team individually considered the data transcriptions. Such researcher triangulation enabled each data item to receive equal attention in the coding process and to enhance trustworthiness of the process (Vaismoradi, Turunen & Bondas, 2013). Transcripts were read repeatedly for familiarisation with and immersion in the underlying data (Howitt & Cramer, 2008; Braun & Clarke, 2006). Codes were either descriptive in nature that matched exact phrases within the text or interpreted the meaning of the text. Codes were then connected within clusters to further discover themes which are common links and patterns from within the data (Howitt & Cramer, 2008). By doing so it was ensured that themes were developed in a inductive manner being anchored in the data (Braun & Clarke, 2006). Being an organic process there was emphasis on reviewing the data set and re-coding and redefining the codes. The rationale behind theme inclusion was discussed by each researcher ensuring equal active engagement in constructing the understanding of the climbers' lived experiences. Whilst doing so they remained cognisant of developing an understanding of the meaning of these experiences. Such a constructivist approach ensured that the lead author's existing socio-

contextual and applied understanding of winter climbing did not guide data analysis. Instead emergent themes were forced to 'earn' their way into the thematic framework (e.g., Charmaz, 2006) and to ensure that data was less susceptible to individual bias (Biddle, Markland, Gilbourne, Chatzisarantis & Sparkes, 2001).

Personal research diaries enabled individual researchers to record their own research trails as a method of minimising the risk of the lead researcher imposing any potential bias (Vaismoradi et al., 2013). As part of this process, we engaged in diagramming to consider the relational nature of the emergent themes which then informed the structure of the interconnected experiential framework (Figures 1 and 2). After this, participant validation techniques were adopted so that participants were able to corroborate the veracity of the research team's interpretations with a view to ensuring the accuracy of the assigned meaning and importance of the climbers' experiences (cf. Gledhill & Harwood, 2014). Given the overall approach and philosophy to the research we contend the notion of methodological congruence (Manyan, 2009) is relevant as our methodological variants selected were consistent with the philosophical underpinning and aims of our study.

**Results**

Our interview conversations explored many factors that influenced why the participants attempted ever-more extreme climbs. From their discussions there was a sense and confirmation that participants regarded themselves as expert climbers who were highly skilled. Their proficiency in climbing, and their experiences to date, provided them the technical ability and mental aptitude to achieve increasingly complex and challenging climbs. By doing so it appeared that they felt able to maintain their considered view as being masters in their field. These findings were encompassed in the first super-ordinate theme which we entitled 'enactive mastery' and reflected elements of self-efficacy. Additionally, participants valued the achievements of their peers and comradery from fellow climbing partners. Not only did this provide them the necessary support mechanisms for this extreme sport but also the method by

which to compare their own performances and achievement which then influenced their future actions. As such we entitled our second super-ordinate theme as 'engendered disinhibition'.

The following sub-sections will elucidate these themes, framing them within the socio-environmental context of elite winter climbing in order to inform the reader's understanding of the lived experiences of the participants. This is with the intention of aiding the reader in their interpretation of the importance of these lived experiences within an elite high-risk sporting population; and the importance these lived experiences had on the intra-individual challenge point.

The two super-ordinate themes are presented with their own lower-order themes as seen diagrammatically in Figures 1 and 2.

***Enactive Mastery***

We interpreted the super-ordinate theme of enactive mastery as a composite of two higher order themes; task mastery and self-mastery.

*Task Mastery*

Task mastery encompassed two sub-themes. The first related to *'new experiences'*. Responses revealed a desire to ascend unclimbed routes and have intense and novel experiences.. Participant 2 described this as an 'adventure' although considered the phrase itself to be 'corny' as he felt that it suggested a child-like or adolescent outlook. Others viewed the unclimbed routes as being an exploration of themselves as much as the terrain saying that 'I've learnt more about myself doing this' [than other activities and experiences]. Others viewed their ever more complex climbs as if building upon their repertoire that enabled them to progress. Furthermore many of the mountain areas in which the participants chose to climb were in remote wilderness areas and accessed by long approaches on difficult terrain. These often involved long days and multiple visits. Participants often operated in relative isolation with their respective climbing partners. As an example, Participant 4 recounted "there's something special about doing first

ascents and I've always loved the whole process of doing something that somebody hasn't done before, it's just fantastic".

To have the drive and confidence to do this required awareness of their own abilities. The participants valued, and were fully focused upon, their sport. They spoke of learning from each climb that further developed their skill set. From this they drew their comfort, confidence and self-belief from previous climbs as influences and motivators to progress themselves further. Hence we created a second sub-theme entitled *'overcoming challenges'*. Participants discussed regularly performing at the highest level of difficulty. Normalising this kind of ascent therefore allowed levels of difficulty to be increased further still. To be able to adhere to the most difficult (crux) section of winter climbing routes all participants described the importance of technical ability as the foundation of their success:

> I was obsessed with the concept of taking climbing to a personal limit physically and technically in the most serious situation I could and I was always quite taken by being able to maintain control of that situation. (Participant 3)

*Self-mastery*

Self-mastery relates to the participants' ability to control their course of action and emotions. One such issue related to their '*perceived control*' which became a sub-theme. All participants had extensive experience of winter climbing both in Britain and abroad. They had all accomplished successful previous ascents at a high standard and were climbing extensively through the winter period. Their previous experiences enabled them to perceive that they had the ability to succeed even in challenging conditions:

> What gave me control? I think doing it and thinking about it, just doing first ascents and consistently climbing to a high standard, maintaining a cool head in a potentially dangerous situation, and you have to get yourself out of it and I think that really just comes from experience. (Participant 2)

Additionally, all participants acknowledged the risk involved in difficult winter ascents and that careful planning was used to mitigate levels of personal risk. To them there was some *'risk acceptance'* which became another sub-theme. Risk was not regarded as a key motivating factor but rather participants viewed it as an inherent part of the activity of winter climbing. Technical and physically demanding movement sequences were required to be performed at the limit of their personal ability. This was often without prior knowledge of both of these or the availability of protection opportunities in the event of a fall. In essence the lack of protection opportunities is a key characteristic in terms of bold ascents. Participant 2 demonstrated the role of risk acceptance in winter climbing motivation:

> Risk is part of it but I don't think that's what climbing's just about...I don't think risk is the reason you do it, risk is part of what you're doing, you're just controlling the risk, you're aware of it at certain times, yes, your brain sort of switches into overdrive. (Participant 2)

Participant 1 offered an alternative view point on risk acceptance by demonstrating how accepting and subsequently mastering risk perception became an important element of climbing motivation:

> Risk is a funny one, I am attracted to climbing hard routes at the limit of my ability, pushing it in a dangerous situation is attractive sometimes, it's all part of it, it can be alluring. (Participant 1)

The first superordinate theme 'enactive master' represents examples by which the participants equipped themselves with the skills and aptitudes to undertake and successfully complete these climbs that others would not attempt. The next section explains how participants restrained themselves from external forces that may limit their success.

***Engendered disinhibition***

We interpreted the second super-ordinate theme of 'engendered disinhibition' because of factors that prompted, enabled and influenced the participants to achieve what they did. In particular all participants spoke of the anxiety they felt prior to particularly challenging and difficult ascents. The methods and manner in which they appraised and then coped with their anxiety arose from the data analysis. These are demonstrated in the following two higher order themes:'self-perception' and 'social cognitive appraisal'.

*Self-perception*

Participants spoke clearly of their '*perceived abilities*' and all agreed that they needed to accurately appraise the match between their current ability and the difficulty of the route in its current climatic condition. The condition of winter climbing routes can vary due a number of factors such as the quality and thickness of snow or ice on key sections. Hence, even though participants felt prepared and able to climb they also spoke of a cognitive approach to their planned activities To them this was mental training as much as physical training. The interplay between these factors is evident in the response of Participant 1:

> I had to return back to that route at some point, they get in your head, so I had to wait for the weather to be right, for me to be right. I remembered the way I felt the first time and it took a lot of self-persuasion to put myself back on the sharp-end.

However, the more common examples of self-perception centred on the next sub-theme entitled *'Interaction of perceived physical and mental fitness'.* The activity of winter climbing is physically demanding often involving lengthy days out in a variety of weather conditions. Physical fitness, which was derived from regular climbing activity, was expressed by all as a key determinate to success which was derived from regular climbing activity. Participant 4 revealed his close relationship between the physical and cognitive elements of fitness:

> Climbing hard and training generated a feeling of ability. It allowed me to assume control. Winter climbing is hard, you can put up with the hardship providing you

> are mentally strong which for me came from having the physical strength. (Participant 4)

Participant 1 recounts how he used his perception of his fitness to control his state anxiety and continue with the planned climb rather than consider an easier alternative.

> I remember a couple of times standing at the bottom of a route, a route I've been thinking about for a while and because it's just not felt right going for the easy option. I think not feeling right is a co-operation [sic] of the weather, you're not fit, your head's not right. Fitness is the key though, even when the weather's dodgy you'll still think "I'm up for this". (Participant 1)

Despite periodic setbacks all participants alluded to visualising a successful ascent prior to, and during, the climbing process in order to overcome adversity. They described this in terms of reviewing previous successful accomplishments and considering future climbs. Participant 1 vividly described his experiences of returning to an extremely difficult route where the consequences of a fall could be fatal due to the lack of protection opportunities. He had been required to retreat during a first attempt as a result of bad weather after completing the crux section. Knowing he had to repeat that crux section again caused considerable anxiety:

> We had failed due to bad weather close to the finish of the route, the very fact that we had to go back knowing what we had climbed and had to do it all again, and more, involved a lot of mental control on my part, more mental control than the first time because I now knew how serious (emphasis) the second pitch was. (Participant 3)

*Social cognitive appraisal*

Social cognitive appraisal relates to the participants' awareness of their relationships with fellow climbers in a discerning way. Suchinsights directly influenced their actions and behavious. One such sub-theme of engendered disinhibition focused on issues of '*social*

*modelling*' in which behaviours were modelled upon the successes or otherwise of their compatriots. Prolific periods of winter climbing occurred when participants became motivated by the success of other leading activists. Participant 2 highlighted "I was seeking anything really, hard routes, there's competition but not overt. I'd hear about what others were doing and I would use that". Peer review was therefore an important issue as it informed the participants' future goals and plans.

Peer support was also key as participants spoke of the importance of a reliable and capable climbing partnerthis we named '*peer trust*'. Examples arose whereby climbing partners ascended a climb as the second climber to remove protective equipment that could endanger one or both. In climbing this is known as 'seconding'. Peer trust is developed if the second is deemed to be strong and capable enough to support and protect the first climber in times of adversity. Alternatively, climbers would reciprocally ascend sections of the climb and agree who would attempt what they perceived to be the crux section. In climbing this is known as 'leading'. In this way, trust in their combined teamwork was generated when the two climbers considered themselves to be a team capable of meeting the climbing challenges. Participant 3 acknowledged the role of peer trust in winter climbing through the following:

> With [partner's name] I had this feeling that this route was meant to be, two people had come together, things were going well. I just thought this route was designed for us to do you know, just really comfortable, just felt we were going to do it. (Participant 3)

Other forms of social-cognitive appraisal were the awareness of other climbers' activities upon each other. These formed the last two sub-themes. Firstly discussions highlighted the complexity of reporting successful climbs to peers and authorities which we have named '*peer feedback*'. Contemporary practices and the future of winter climbing is a highly emotive subject within the climbing community. Although many are receptive to change much debate centres on the style of climbing undertaken. For example anecdotally there has been recent

debate surrounding the prevailing winter conditions required for an ascent to be considered a legitimate winter climb. In particular the verification of the reported grade of difficulty in winter climbing is problematic due to the subjective nature of reporting winter climbing difficulty (Moran, 1998). Participant 1 received a negative response from a climbing club journal editor regarding the proposed grading of a difficult new route they had climbed. As a result Participant 1 chose to solo several established difficult winter routes (i.e. peer accepted at the claimed difficulty level) to demonstrate the higher climbing grade at which he claimed he was now operating:

> After saying the route was Grade X [grade removed to protect participant anonymity] I was told I was treading on thin ground as no route had been climbed at that grade. So I soloed [names removed] and others to prove my point these weren't as hard. (Participant 1) [Author note: the participant completed these solo routes with an experienced peer audience observing so as to avoid any further contesting of his claimed grade]

Participant 4 reported how a particularly challenging route was climbed but was not universally viewed as 'ethically pure'. This was because they had used a point of aid to assist progress through a difficult section and also rested on another piece of protection due to fatigue.

> I tried to complete the route twice, the second time we got to the top but used a point of aid and a tensioned rest. I was willing to declare it. People implied the route wasn't done in perfect style so I went back and did it clean on the third attempt. (Particpant 4)

This recollection from Participant 4 demonstrates a link between the current sub-theme of peer feedback and the last theme of 'peer rivalry'.

Peer rivalry was openly reported in regard of the standard of the climbs that participants had undertaken. Participants operated within their own small social groups but were fully aware of

the activities of their rivals. Several difficult unclimbed routes (or 'projects') were well known as were details of previous unsuccessful attempts to climb these routes. Successful accomplishment of such routes and establishing difficult new climbs were considered to be the key measure of success in winter climbing. Such success provided additional drive and encouragement to Participant 3:

> So suddenly I was in a different position to what I was when other guys were doing better than me. I was in a position where I was the better one, my direction, so from a personal view it was quite a change and I accepted it. (Participant 3)

As such the themes and sub-themes that represent 'engendered disinhibition' offer further examples by which the participants managed to maintain control before and during the complex and challenging climbs and dissociate themselves from negative perceptions.

**Discussion**

To our knowledge this study represents the first qualitative investigation of motivational orientation and risk taking behaviour in elite winter climbers. Two super-ordinate themes emerged from the data; enactive mastery and engendered disinhibition. Enactive mastery was composed from two higher order themes of task mastery and self-mastery. Engendered disinhibition was composed from two higher order themes of social cognitive appraisal and self-perception. In accepting more than one theoretical or conceptual approach we shall now discuss the emergent themes from a meta-theoretical perspective.

Our analysis revealed task mastery to be comprised from new experiences and overcoming challenges in essence the successful ascent of difficult new climbs; whilst self-mastery was comprised from the lower order themes of perceived control and risk acceptance. Mastery experiences are thought to exert the strongest influence on self-efficacy belief as the individual has 'lived' their experience (Bandura, 1997). Task mastery and successful outcomes have been suggested as a significant motivational influence in high risk sporting pursuits (Ewert, 1994;

Slanger & Rudenstam, 1997). It is important to recognise that task mastery is considered to be domain specific and the transferability of behavioural motivations may vary; specifically an individual who has performed successfully within one style of winter climbing behaviour may not be as motivated to perform within one they have yet to develop a high level of task mastery. Physiological arousal affects self-efficacy belief in terms of how individuals perceive anxiety and challenging situations (Bandura, 1997). Our sample of elite winter climbers interpreted increased levels of somatic anxiety as normal given the physically demanding nature of the sport and their repeated exposure within it. Interpretation is the key factor and we propose this would have positively influenced self-efficacy belief.

Kerr and Mackenzie (2012) analysed the responses of high risk sports participants' using reversal theory. They reported that that one participant's motivation was based on setting personnel challenges of a known level of difficulty. This level was set slightly higher than that at which they were currently operating and based on past mastery experiences. The authors suggest this maintained a protective frame which reversed from paratelic to telic when the new challenge exceeded the participants current ability and they experienced high levels of anxiety. In contrast, the participants within our study were attempting to ascend unclimbed routes i.e. challenges without a known level of difficulty but expected to be high. Our participants prepared extensively for their ascents by consistent exposure to high level winter climbing and researching potential new routes, which may be characterised within reversal theory as autic mastery i.e. displaying high self-orientation as opposed to the alloic-displaying altruistic qualitites (Kerr, 1997). Kerr (1993) suggested that a reversal of the telic-paratelic pairing would be effective in minimizing cognitive anxiety and thus allow the individual to interpret high arousal as excitement. However, a recent paper has proposed that confidence frames in high risk sports may be more complex and based on a telic-mastery state combination (Kerr, 2014). Participant 3's response within the '*task mastery*' subsection clearly indicates a primary motive of personal achievement in terms of climbing performance. All participants alluded to

maintaining a level of self-control during climbing activiites and there was a paucity of responses that may be considered as paratelic. The common achievement goal was climbing to the very highest standard which supports the notion of a telic-mastery state. Periodically during ascents high emotional states had to be overcome, especially through crux sections. Participant 2's response in relation to '*risk acceptance*' during climbing may indicate that self-induced reversals in order to maintain an overall protective frame were occurring.

The challenge to ascend unclimbed routes and have novel and intense experiences may be taken to provide partial support for sensation seeking theory (Zuckerman, 1994). However, the pursuit of these novel and intense experiences did not seem to relate to a form of thrill seeking; as such, rather much of the excitement seemed to stem from the inherently challenging nature of the activities undertaken. Impulsivity is considered an interrelated dimension within sensation seeking theory (Zuckerman, 1994). The participants' responses did not indicate impulsive tendencies. Participant 1's (see results: peer feedback) course of action in response to negative feedback from a climbing club journal editor was to solo several established difficult winter routes to demonstrate he was now operating at a higher standard. This may, at face value, appear impulsive but his subsequent action was deliberate, calculated and planned. It may be important to consider risk taking behaviour and the acceptance of risk as distinct from thrill seeking in elite winter climbing. Studies on rock climbers have found enactive mastery experiences to significantly influence disinhibition and therefore allow individuals to engage in riskier forms of climbing (Llewellyn & Sanchez, 2008; Llewellyn et al., 2008). Our findings revealed engendered disinhibition was comprised of social cognitive appraisal and self-perception. The attainments of other leading climbers provided vicarious experiences to which participants could socially model their own chances of success. Direct competition with other climbers was an important motivating factor and so rival climbers did not simply play a disinhibiting role. Climbing partners were a key source of social persuasion, providing encouragement and guidance to participants. The peer feedback they received was related to

recognition of achievement and became an indicator of social status within the winter climbing fraternity. Our findings suggest that this external influence may have been internalised and then impacted on raising intrinsic motivation and subsequent task involvement. Self-efficacy theory maintains positive interpersonal experiences such as peer feedback (social persuasion) are conducive towards creating a sense of competence and enhance intrinsic motivation for that behaviour (i.e. a winter climber's perception of their climbing ability). However, if the interpersonal experience is demeaning or effectance challenging this may pose a threat to perceived competence. Bandura (1997) suggests strong efficacy beliefs allow individuals to cope with periodic setbacks and develop significant resilience. This was indicated by participant 3' response in *'Interaction of perceived physical and mental fitness'* where they had to retreat from a particularly hard climb and then return to climb it at a later date.

Early in the winter climbing season the participants in our study would complete ascents of routes with a known standard. On subsequent occasions during this process they attempted increasingly more difficult climbs until they felt a level of preparedness congruent with an attempt of the very hardest climbs with or without a known standard. This interactional process between the lower order themes of perceived ability and physical and mental fitness facilitated the development of a robust confidence frame of self-perception and ultimately engendered disinhibition.

From our analysis we suggest the two super ordinate themes of enactive mastery and engendered disinhibition are reciprocally determinate motivational factors. The paradox faced by elite winter climbers is the motivation to perform at the highest standard, close to or at the limit of their personal ability, in a challenging and potentially life threatening environment. Successful mastery experiences influenced the individual's level of self-restraint in terms of willingness to accept, and engage in more difficult and riskier forms of winter climbing. The proposed reciprocal nature of this relationship may act to mediate or reframe the potentially debilitative effects of increased cognitive anxiety. As such, we suggest that further

investigation of the relationship between mastery and disinhibitory factors using a telic-mastery approach may serve our understanding of both elite winter climbing behaviour and other related high risk sports.

It is important to consider our findings in context. By design this was a study of a small number of elite British male winter climbers and as such may not be transferable to other contexts, for example winter climbers in other areas subject to different cultural influences, those operating at lower levels of difficulty, or female climbers. Males higher in self-efficacy have been found to have a greater risk taking propensity in rock climbing compared to women (Sanchez & Llewellyn, 2009). Future studies may wish to consider gender differences in motivation and performance in winter climbing. Other limitations of this study include the reliance on elite winter climbers' recall of their experiences and factors that motivate them or enable them to overcome anxieties and manage risk. The interviewer (XX) is an experienced winter climber. This made the interviews easier to conduct because it was relatively easy to discuss detailed aspects of winter climbing behaviours and the associated motivational and disinhibitional factors. However, this knowledge and associated preconceptions will also have influenced the way in which the interviews were conducted and interpreted. However, a reflexive approach was adopted throughout the process and emergent themes were thoroughly explored within the authorship team.

**Conclusions**

Our findings provide a unique insight into the range of factors explaining the motivational orientation and risk taking behaviour of elite winter climbers. Participants were often operating at the limit of their abilities, in a variety of challenging environments, whilst attempting to ascend previously unclimbed routes. Enactive mastery and engendered disinhibition emerged as key behavioural and psychological determinants that influenced individuals to be able to undertake more difficult and riskier forms of winter climbing. Goal achievement was their

primary motive which was set within a confidence frame encapsulated within these super-ordinate themes. Our participants offered varied examples by which they achieved this which furthers our understanding of performance motivation in prolonged engagement high risk sports.



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Figure 1. Interconnected experiential framework of clusters to themes to the "enactive mastery" superordinate theme.

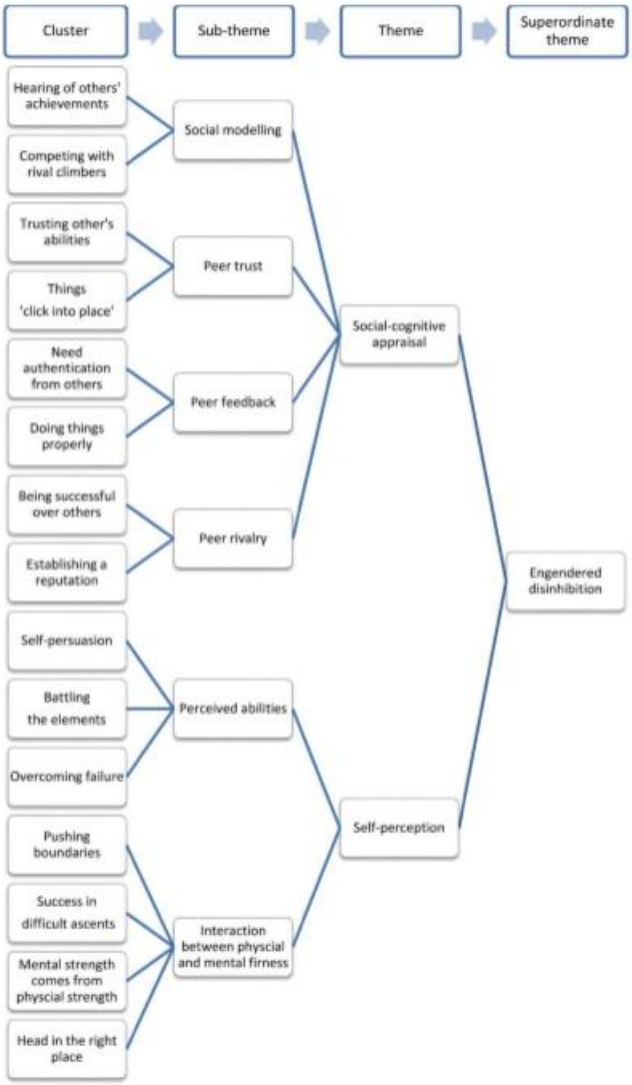


Figure 2. Interconnected experiential framework of clusters to themes to the "engendered disinhibition" superordinate theme.